

REMARKS

This is in response to the Office Action dated June 21, 2001. In view of the foregoing amendments and following representations, reconsideration is respectfully requested.

Initially, filed concurrently herewith, is an "Information Disclosure Statement" (IDS). The Examiner is requested to kindly acknowledge the filing of the IDS by returning a copy of Form-1449 that has been initialed and dated.

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Next, on pages 2-3 of the Office Action, the original claims are rejected as follows:

Claims 12, 13, 18, 19, 21, 23, 24, 38-46 and 49-72 are rejected under 35 U.S.C. 102(e) as being anticipated by Mack (U.S. Patent No. 5,941,758);

Claims 14-17, 20, 22, 25-37 and 47-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mack in view of Kobayashi et al. (U.S. Patent No. 5,584,751).

The Mack patent has a filing date of November 13, 1996.

The present application claims priority based on Japanese Application No. 8-65315 filed February 27, 1996, which is prior to the filing date of the Mack patent. Therefore, a translation of the certified copy of the foreign priority document is submitted herewith. The translation is accompanied by a statement that the translation of the certified copy is accurate. Accordingly, it is submitted that applicant is entitled to the priority date, and thus the effective date of the Mack patent has been overcome.

In view of the fact that the Mack patent has now been overcome and each ground of rejection relies on the Mack patent, it is submitted that claims 12-87, as well as claims 1-11, are now allowable over the prior art of record.

In view of the above, it is submitted that the present application is now clearly in condition for allowance. The Examiner therefore is requested to pass this case to issue.

In the event that the Examiner has any comments or suggestions of a nature necessary to place this case in condition for allowance, then the Examiner is requested to contact Applicant's undersigned attorney by telephone to promptly resolve any remaining matters.

Respectfully submitted,

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Claims 1-11 allowed

Group I (Independent claims are 73 and 80)

73. A polishing apparatus for polishing a surface of a workpiece, comprising:
- a top ring for holding a workpiece; and
 - a plurality of chambers formed in said top ring, fluid pressures being supplied in said respective chambers to provide polishing pressure to a central area and an outer circumferential area of the workpiece, wherein a radial width of said outer circumferential area is narrower than that of said central area.
74. A polishing apparatus according to claim 73, wherein said polishing pressure comprises a fluid pressure.
75. A polishing apparatus according to claim 73, wherein said polishing pressure comprises a compressed air pressure.
76. A polishing apparatus according to claim 73, wherein said central area and said outer circumferential area are formed by chambers formed in said top ring.
77. A polishing apparatus according to claim 73, further comprising:
- a third area located between said central area and said outer circumferential area.
78. A polishing apparatus according to claim 73, further comprising:
- a presser ring disposed around the workpiece and contacting a polishing surface for polishing the workpiece.
79. A polishing apparatus according to claim 78, wherein said presser ring is pressed by pressurized fluid.
80. A method for polishing a workpiece, comprising:
- holding a workpiece on a surface of a top ring; and
 - applying a polishing pressure on a surface of the workpiece, wherein an area where said polishing pressure is applied is divided to a central area and an outer circumferential area of the workpiece, and the radial width of said outer circumferential area is narrower than that of said central area.
81. A method according to claim 80, wherein said polishing pressure comprises a fluid pressure.

82. A method according to claim 80, wherein said polishing pressure comprises a compressed air pressure.

83. A method according to claim 80, wherein said central area and said outer circumferential area are formed by chambers formed in said top ring.

84. A method according to claim 80, wherein the area where said polishing pressure is applied is divided to said central area, said outer circumferential area and a third area located between said central area and said outer circumferential area.

85. A method according to claim 80, further comprising:

pressing a presser ring disposed around the workpiece against a polishing surface for polishing the workpiece.

86. A method according to claim 85, wherein said presser ring is pressed by pressurized fluid.

Group II (Independent claims are 12, 38, 45, 49, 68, 70, and 71)

12. A method of polishing a surface of a workpiece, comprising:

holding a workpiece by a top ring; and

pressing the workpiece against a polishing surface of a turntable to polish a surface of the workpiece by applying independently adjustable pressures to substantially concentric circular areas of the workpiece, respectively.

13. A method according to claim 12, wherein said pressure is produced by air pressure.

14. A method according to claim 12, further comprising applying an adjustable pressure to a presser ring vertically movably disposed around said top ring for pressing said polishing surface.

15. A method according to claim 14, wherein said pressure applied to said presser ring is produced by air pressure.

16. A method according to claim 12, wherein the pressure applied to a central portion of the workpiece is larger than the pressure applied to an outer circumferential portion of the workpiece.

17. A method according to claim 12, wherein the pressure applied to an outer circumferential portion of the workpiece is larger than the pressure applied to a central portion of the workpiece.

38. A method of polishing a surface of a workpiece, the method comprising:

holding a workpiece with a top ring;

applying a first polishing pressure to a central portion of the workpiece;

applying a second polishing pressure to an outer circumferential portion of the workpiece, wherein the first polishing pressure is different than the second polishing pressure, and the first and second polishing pressures are independently adjustable; and

pressing a presser ring against a polishing surface.

39. The method as claimed in claim 38, wherein the first and second polishing pressures are produced by air pressure.

40. The method as claimed in claim 38, wherein the first and second polishing pressures are produced by pressurized fluid.

41. The method as claimed in claim 38, wherein the polishing pressure applied to the central portion of the workpiece is larger than the polishing pressure applied to the outer circumferential portion of the workpiece.

42. The method as claimed in claim 38, wherein the polishing pressure applied to the outer circumferential portion of the workpiece is larger than the polishing pressure applied to the central portion of the workpiece.

43. The method as claimed in claim 38, wherein the polishing pressures can be independently changed at different locations of the workpiece.

44. The method as claimed in claim 43, wherein the number of different locations where the polishing pressures can be independently changed includes at least three different locations.

45. A method of polishing a surface of a workpiece comprising:

holding a workpiece by a top ring;

pressing the workpiece by the top ring against a polishing surface;

providing a plurality of independently adjustable polishing pressures for application to the workpiece; and

applying a pressing force to the workpiece by the polishing pressures to polish the workpiece in such a state that the pressing force is controllable and adjustable in both a central portion and an outer circumferential portion of the workpiece.

46. The method as claimed in claim 45, further comprising pressing a presser ring against the polishing surface.

47. The method as claimed in claim 46, wherein the pressing of the pressing ring is achieved by applying an adjustable pressure to the presser ring.

48. The method as claimed in claim 47, wherein the pressure applied to the presser ring is produced by air pressure.

49. A workpiece carrier for holding a workpiece and pressing the workpiece against a polishing surface, said workpiece carrier comprising:

a top ring for supporting the workpiece to be polished; and

a pressing mechanism for pressing the workpiece against the polishing surface, said pressing mechanism being configured to apply a first polishing pressure to a central circular area of the workpiece and a second polishing pressure to an annular area of the workpiece that is outside of the central circular area, wherein the first polishing pressure and the second polishing pressure are controllable independently of each other.

50. The workpiece carrier as claimed in claim 49, wherein said pressing mechanism comprises at least two pressurized chambers to which pressurized fluid is supplied, said at least two pressurized chambers comprising a central circular chamber and a first annular chamber located outside of said central circular chamber, said central circular chamber and said first annular chamber being positionable over the central circular area and the first annular area of the workpiece, respectively, wherein said first polishing pressure and said second polishing pressure can be created by said pressurized fluid supplied to said central circular chamber and said first annular chamber, respectively.

51. The workpiece carrier as claimed in claim 49, wherein said first polishing pressure and said second polishing pressure are controllable independently of each other during polishing.

52. The workpiece carrier as claimed in claim 49, wherein said first polishing pressure and said second polishing pressure can be substantially uniformly applied to each of the central circular area and the first annular area of the workpiece.

53. The workpiece carrier as claimed in claim 50, wherein said first polishing pressure and said second polishing pressure are controllable by varying said pressurized fluid supplied to said central circular chamber and said first annular chamber, respectively.

54. The workpiece carrier as claimed in claim 50, wherein said pressurized fluid comprises pressurized air.

55. The workpiece carrier as claimed in claim 50, further comprising a second annular chamber located outside of said first annular chamber, wherein said second annular chamber can be positioned over a second annular area located outside of said first annular area of the workpiece so that a third polishing pressure, created by pressurized fluid supplied to said second annular chamber, can be applied to the second annular area of the workpiece.

56. The workpiece carrier as claimed in claim 55, wherein the pressurized fluid supplied to said second annular chamber comprises pressurized air.

68. A method for polishing a surface of a workpiece, the method comprising:

holding a workpiece by a top ring; and

pressing the workpiece against a polishing surface by applying polishing pressure to the workpiece, said polishing pressure including a first polishing pressure applied to a central circular area of the workpiece and a second polishing pressure applied to a first annular area of the workpiece located outside of said central circular area, said first polishing pressure and said second polishing pressure being controllable independently of each other.

69. The method as claimed in claim 68, further comprising applying a third polishing pressure to a second annular area of the workpiece located outside of the first annular area of the workpiece, the third polishing pressure being controllable independently of the first and second polishing pressures.

70. A method for polishing a surface of a workpiece, the method comprising:

holding a workpiece by a top ring;

pressing the workpiece against a polishing surface by applying polishing pressure to the workpiece, the polishing pressure including a first polishing pressure applied to a

central circular area of the workpiece and a second polishing pressure applied to a first annular area of the workpiece located outside of the central circular area of the workpiece, the first polishing pressure and the second polishing pressure being controllable independently of each other; and

pressing an area of the polishing surface around the workpiece with a presser ring.

71. A method for polishing a surface of a workpiece, the method comprising:

holding a workpiece by a top ring; and

pressing the workpiece against a polishing surface by applying polishing pressure to the workpiece, the polishing pressure including a first polishing pressure applied to a central circular area of the workpiece, a second polishing pressure applied to a first annular area of the workpiece located outside of the central circular area, and a third polishing pressure applied to a second annular area of the workpiece located outside of the first annular area, wherein the first polishing pressure, the second polishing pressure and the third polishing pressure are independently controlled with respect to each other.

Group III (Claims 66, 71 and 72 are independent)

44. The method as claimed in claim 43, wherein the number of different locations where the polishing pressures can be independently changed includes at least three different locations.

55. The workpiece carrier as claimed in claim 50, further comprising a second annular chamber located outside of said first annular chamber, wherein said second annular chamber can be positioned over a second annular area located outside of said first annular area of the workpiece so that a third polishing pressure, created by pressurized fluid supplied to said second annular chamber, can be applied to the second annular area of the workpiece.

64. The polishing apparatus as claimed in claim 59, further comprising a second annular chamber located outside of said first annular chamber and configured to correspond to a second annular area of the workpiece that is located outside of the first annular area of the workpiece, wherein a third polishing pressure can be applied to said second annular area and is created by pressurized fluid being supplied to said second annular chamber.

66. A polishing apparatus for polishing a surface of a workpiece, said polishing apparatus comprising:

a turntable having a polishing surface thereon;

a top ring for supporting the workpiece to be polished;

three pressurized chambers provided in said top ring to which pressurized fluid is supplied, said three pressurized chambers comprising a central circular chamber, a first annular chamber located outside of said central circular chamber, and a third annular chamber located outside of said first annular chamber, wherein said pressurized chambers can be positioned above the workpiece so that a first polishing pressure can be applied to a central circular area of the workpiece, a second polishing pressure can be applied to a first annular area of the workpiece located outside of the central circular area, and a third polishing pressure can be applied to a second annular area of the workpiece located outside of the first annular area of the workpiece, wherein the first, second and third polishing pressures can be created by pressurized fluid being supplied to said first central circular chamber, said second annular chamber and said third annular chamber, respectively.

69. The method as claimed in claim 68, further comprising applying a third polishing pressure to a second annular area of the workpiece located outside of the first annular area of the workpiece, the third polishing pressure being controllable independently of the first and second polishing pressures.

71. A method for polishing a surface of a workpiece, the method comprising:

holding a workpiece by a top ring; and

pressing the workpiece against a polishing surface by applying polishing pressure to the workpiece, the polishing pressure including a first polishing pressure applied to a central circular area of the workpiece, a second polishing pressure applied to a first annular area of the workpiece located outside of the central circular area, and a third polishing pressure applied to a second annular area of the workpiece located outside of the first annular area, wherein the first polishing pressure, the second polishing pressure and the third polishing pressure are independently controlled with respect to each other.

72. A method for polishing a surface of a workpiece, the method comprising:

holding a workpiece by a top ring;

pressurizing a central circular chamber in the top ring to apply a first pressure to a central circular area of the workpiece;

pressurizing a first annular chamber in the top ring to apply a second pressure to a first annular area of the workpiece located outside of the central circular area of the workpiece; and

pressurizing a second annular chamber in the top ring to apply a third pressure to a second annular area of the workpiece located outside of the first annular area of the workpiece.

Remaining claims to be abandoned in favor of reissue continuation applications